

REMARKS

In the Office Action, the Examiner rejected claims 1-67. By the present Response, Applicant cancels claim 45 and amends claims 1, 5, 12, 15, 25, 27, 32, 41-44, 46-49, 51, 52, 55, 56, 58, and 59 to further clarify the claimed subject matter. These amendments add no new matter. Further, because these amendments merely serve to clarify the claimed subject matter, these amendments alone should not necessitate a new search by the Examiner. Upon entry of the amendments, claims 1-44 and 46-67 will remain pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Information Disclosure Statement

Applicant thanks the Examiner for consideration of the references cited in Form PTO-1449 submitted on June 25, 2004. However, while the Examiner has indicated consideration of the three U.S. Patent Documents by initialing the boxes provided next to these references, the Examiner appears to have missed the reference cited under the "Other Art" section. As a copy of this reference was provided with the disclosure statement, Applicant believes this to be a mere oversight. Accordingly, Applicant respectfully requests that Examiner acknowledge consideration of the El-Sharkawi reference in a future communication.

Rejections Under 35 U.S.C. § 101

The Examiner provisionally rejected claims 1-67 under 35 U.S.C. § 101 for claiming the same invention as that of claims 1-35 of co-pending Application No. 10/201,073 and claims 1-37 of co-pending Application No. 10/201,007. Applicant respectfully traverses this rejection.

Applicant respectfully reminds the Examiner that a statutory double patenting rejection can only be supported if the claims in question and the cited claims necessarily and literally infringe upon each other. *See In re Vogel*, 422 F.2d. 438, 441 (C.C.P.A.

1970); *see also Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1984); Manual of Patent Examining Procedure, 8th ed., § 804(II)(A). In other words, a statutory double patenting rejection is only valid if the claims of the present application are *identical* in scope to the prior claims cited by the Examiner.

In the instant case, contrary to the Examiner's assertion, the present claims are *not* drawn to subject matter *identical* to that claimed in either co-pending Application No. 10/201,073 or Application No. 10/201,007 of El-Ibiary (hereinafter "the '073 application" and "the '007 application" respectively). As presented below, at least some differences between the presently pending claims and the corresponding claims of the '073 and '007 applications are highlighted in italics. While only certain claims of the cited applications and present application are compared below, substantial differences exist between all of the claims of the present application and those of the previous applications cited by the Examiner.

Claim 1:

Independent claim 1 of the '073 application recites:

An electric motor system, comprising:
an electronic device that is operable to establish
estimated values of a plurality of electrical parameters of a
motor based on electrical input data *and stator resistance
data.*

Independent claim 1 of the '007 application recites:

An information system for an electric motor having a
stator and a rotor, comprising:
a processing module that is operable to calculate an
estimated value of a motor parameter that is variable during
motor operation *using motor electrical input data, rotor and
stator electrical characteristics data, and rotor speed data.*

Independent claim 1 in the present application recites:

A system for estimating parameters of a motor, the system comprising:
an electronic device that is operable to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data *obtained at a single load point of the electric motor.*

Claim 41:

Independent claim 33 of the '073 application recites:

A program stored in a tangible medium, wherein the program is operable to enable a processing system to establish an estimated value *of at least one* electrical parameter of a motor *based on stator resistance data and electrical input data.*

Independent claim 41 in the present application recites:

A machine readable medium for analyzing an electric motor, comprising:
a motor estimation module stored on the machine readable medium and adapted to establish estimated values *of a plurality* of electrical parameters of the electric motor *based at least partially on measured motor parameters, wherein the motor estimation module is adapted to estimate an operating parameter of the electric motor based at least partially on the estimated values.*

Applicant respectfully submits that the Examiner has failed to meet his burden in establishing a *prima facie* case for statutory double patenting. As illustrated by the highlighted text of the corresponding independent claim groups, there are a number of differences between the claims recited in the present application and the claims presented in the '073 and '007 applications. Unless the Examiner can demonstrate that these differences are meaningless, Applicant submits that any rejection under 35 U.S.C. § 101 for statutory double patenting of the presently recited claims over the '073 and '007 applications is improper. Accordingly, Applicant requests that the Examiner withdraw

this provisional rejection. If the Examiner chooses to maintain the rejection under 35 U.S.C. § 101, Applicant respectfully requests that the Examiner provide support for this position by providing a mapping of the respective claims and a rational basis for concluding that the instantly claimed subject matter is identical to the subject matter recited in the claims of the '073 and '007 applications.

Rejections Under 35 U.S.C. § 112

In the Office Action, the Examiner rejected claims 1-67 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. More specifically, the Examiner rejected claims 1-39 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. The Examiner also rejected claims 40-67 under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. Applicant respectfully, but vigorously, traverses these rejections.

The Court of Appeals for the Federal Circuit has repeatedly addressed the issue of sufficiency of disclosure, and that Court's precedent controls in these issues. Indeed, the standard for determining whether the specification meets the enablement requirement was cast in the Supreme Court decision of *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916) in terms of the degree of experimentation needed to practice the claimed invention, and whether this degree of experimentation is undue or unreasonable. The Federal Circuit continues to employ this same standard. *In re Wands*, 8 U.S.P.Q.2d 1400, 1404 (Fed. Cir. 1998). A patent need not teach, and preferably omits, what is well known in the art. *In re Buchner*, 18 U.S.P.Q.2d 1331, 1332 (Fed. Cir. 1991). Moreover, it has long been settled that so long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire

scope of the claims, the enablement requirement under 35 U.S.C. § 112 is satisfied. *In re Fisher*, 166 U.S.P.Q. 18, 24 (CCPA 1970).

Although the Examiner may take exception to the terms used in the claims, he is reminded that the patentee may be his own lexicographer. *Ellipse Corp. v. Ford Motor Co.*, 171 U.S.P.Q. 513 (7th Cir. 1971), *aff'd*, 613 F.2d 775 (7th Cir. 1979), *cert. denied*, 446 U.S. 939 (1980). The terms employed in the claims are clearly described in the specification, which provides adequate teaching for one skilled in the art to make and use the claimed invention.

In summary, the Examiner bears the burden of establishing a *prima facie* case of non-enablement. A specification disclosure which contains a teaching of the manner and process of making and using a claimed invention in terms which correspond to the scope of those used in describing and defining the subject matter sought to be patented, as in the present case, must be taken as being in compliance with the enablement requirement. See Manual of Patent Examining Procedure, Section 2164.04.

Further, a claim satisfies 35 U.S.C. § 112, second paragraph, if the claim appraises one of ordinary skill in the art of its scope, thus providing clear warning to others as to what constitutes infringement of the patent. See *Solomon v. Kimberly-Clark Corp.*, 55 U.S.P.Q.2d 1279, 1283 (Fed. Cir. 2000); see also Manual of Patent Examining Procedure, Section 2173.02. Conversely, if the language of the claim is such that a person of ordinary skill in the art would not understand how infringement could be avoided, then a rejection under Section 112, second paragraph, would be appropriate. See *id.*; see also *Morton Int'l, Inc. v. Cardinal Chem. Co.*, 28 U.S.P.Q.2d 1190, 1195 (Fed. Cir. 1993).

In rejecting the present claims under 35 U.S.C. § 112, the Examiner only discusses two of the nine independent claims, namely claims 1 and 41. In the case of the former, claim 1 recites:

A system for estimating parameters of a motor, the system comprising:
an electronic device that is operable to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data obtained at a single load of the electric motor.

The actual basis of the Examiner's rejection of claim 1 is unclear. The Examiner refers to 35 U.S.C. §112, second paragraph, and to M.P.E.P. § 2172.01. Applicant respectfully notes that the cited portion of the M.P.E.P. suggests that a Section 112, first paragraph, rejection may be proper as not enabling when a claim is incomplete, omitting matter disclosed to be essential to the invention. The cited passage continues, suggesting a Section 112, second paragraph, rejection is proper for failure to point out and distinctly claim the invention when a claim fails to *interrelate* essential elements of the invention. In the present case, the Examiner appears to have mixed these paragraphs, having rejected the claims under Section 112, second paragraph, while asserting that the claims are incomplete because they are allegedly missing necessary elements. However, this distinction is believed moot in light of the fact that, as discussed immediately below, the present claims may not be rejected properly under either paragraph. If the Examiner chooses to maintain his rejection, Applicant respectfully requests that the Examiner clarify his perceived basis for the rejection and provide a *complete* rejection of the claims discussing the believed deficiencies of each claim.

Independent claim 1 clearly recites "an electronic device that is operable to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data obtained at a single load point of the electric motor." This claim is neither missing any essential elements nor unclear in any manner. Further, except for a broad allegation that the claims are somehow deficient, the Examiner fails to particularly

point out any of the supposedly missing essential elements. Applicant notes that the claim language is fully supported by the specification. *See, e.g.*, Application, page 5, line 29 – page 6, line 18; FIG. 3. Applicant also reminds the Examiner that breadth of a claim is not the same as indefiniteness. *In re Miller*, 169 U.S.P.Q. 597 (C.C.P.A. 1971); *see also* Manual of Patent Examining Procedure, Section 2173.04. The scope of independent claim 1 would be clear to any person skilled in the art. If a system included “an electronic device that is operable to establish values of a plurality of electrical parameters of an electric motor based on electrical input data obtained at a single load point of the electric motor,” it would read on the present claim. Applicant believes this language is definite, particularly when read in light of the disclosure and the teachings of the prior art.

Turning now to independent claim 41, Applicant does not necessarily agree with the rationale provided by the Examiner for the rejection. However, for the purpose of efficient prosecution of the present application, Applicant has chosen to amend claim 41, as well as dependent claims 42-44 and 46-49, to clarify the claimed subject matter. The Examiner’s rejection of these claims under Section 112, second paragraph, is believed moot in view of these amendments.

For at least the reasons provided above, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 112.

Rejections Under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1-67 under 35 U.S.C. § 102(b) as being anticipated by Kliman et al. (U.S. Patent No. 6,262,550), or Ohm et al. (U.S. Patent No. 6,002,234), or Dowling et al. (U.S. Patent No. 6,308,140 or 6,236,947 or 6,144,924). Applicant respectfully traverses these rejections.

As a preliminary matter, Applicant notes the Examiner rejected sixty-seven claims, including nine independent claims, on the basis of three independent references, yet

provided only a cursory rationale as to why the Examiner believed these references anticipate the present claims. Applicant respectfully reminds the Examiner of his duties and obligations under 37 C.F.R. § 1.104 and MPEP § 707.07 and request that the Examiner clarify his rejection, if maintained, and specifically cite the presently recited features in a future non-final Office Action.

Applicant reminds the Examiner that anticipation under Section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 227 U.S.P.Q. 773 (Fed. Cir. 1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Moreover, the prior art reference also must show the *identical* invention “*in as complete detail as contained in the ... claim*” to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added). Accordingly, Applicant needs only point to a single element not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

Furthermore, Applicant respectfully reminds the Examiner that M.P.E.P. § 2111 states that “[d]uring patent examination, the pending claims must be given there [*sic*] broadest reasonable interpretation consistent with the specification” (emphasis added). While limitations from the specification cannot be read into the claims, “reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim is a quite different thing from ‘reading limitations of the specification into a claim...’” M.P.E.P. § 2111, *In re Prater*, 415F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969).

During examination, the claims must be interpreted as broadly as their terms *reasonably* allow. This means that the words of the claims must be given their plain meaning unless applicant has provided a clear definition in the specification. *In re Zletz*,

893 F.2d 319, 321, 13 U.S.P.Q.2d 1320, 1322 (Fed. Cir. 1989); M.P.E.P. § 2111.01.

“Words in patent claims are given their ordinary meaning in the usage of the field of the invention, unless the text of the patent makes clear that a word was used with a special meaning.” *In re Sneed*, 710 F.2d 1544, 218 U.S.P.Q. 385 (Fed. Cir. 1983).

Applicant's Disclosure

The present disclosure relates to a novel technique for estimating unknown parameters of an induction motor based on motor data obtained at one or more operating points or a no-load operating point. *See, e.g.*, Application, page 1, lines 6-9. In an exemplary embodiment, a system 80 is provided, which comprises a data processing module 82 that is electrically coupleable to a motor 20. *See, e.g., id.* at page 5, line 29 – page 6, line 2; FIG. 3. Data processing module 82 of the embodiment is operable to *utilize data obtained at two load conditions of the motor 20 to establish values of various electrical parameters* of the motor, such as the electrical resistance of the rotor and the leakage inductance of the stator and rotor. *See, e.g., id.* at page 6, lines 2-5. Data processing module 82 may also utilize data obtained from an operating point with no load on the motor, a single load point, or a plurality of load points in accordance with the disclosed techniques. *See, e.g., id.* at page 21, lines 12-26; *id.* at page 32, line 27 – page 33, line 8; *id.* at page 41, lines 10-25; FIGS. 6-8. Data processing module 82 may then *use the values of the estimated motor electrical parameters to estimate motor operating parameters*; such operating parameters may include the temperature of the rotor, the torque of the motor, and the efficiency of the motor. *See, e.g., id.* at page 6, lines 5-8. Data processing module 82 may be provided as a stand-alone *device*, as part of a motor, or in a kit form to be added to an existing installed motor. *See, e.g., id.* at page 6, lines 8-9.

The Kliman et al. Reference

In contrast to the present disclosure, the Kliman et al. reference is directed to an integrated system that acquires time-coordinated data on available motor parameters for

processing and storage to a database. *See* Kliman et al., col. 3, lines 15-17. Such coordination allows technicians to better diagnose motor problems. *See id.*, col. 4, lines 35-48. As noted by the Examiner in the last Office Action, the system comprises a motor 16 in addition to motor unit 12, motor control center unit 14, and motor control center (MCC) 18. *See id.*, col. 3, line 65 – col. 4, line 10. The system also comprises a communication link 20 to allow data exchange between units 12 and 14 for synchronization of data collected at each unit. *See id.*, col. 5, lines 22-28. Further, the system also includes measurement instrumentation 22 and 24 to capture signals from sensors in the vicinity of motor 16 and MCC 18, respectively. *See id.*, col. 5, lines 55-62; col. 6, lines 19-24; col. 7, line 65 – col. 8, line 4. Once this data is obtained, it may be stored in a motor database 25 for future use by service personnel. *See id.*, col. 9, lines 42-59.

While the cited reference teaches a motor having parameters, the Kliman et al. reference fails to anticipate the present claims. For example, the reference fails to teach an electronic device operable to establish estimated values of a plurality of electrical parameters of an electric motor based on electrical input data obtained at a single load point of the electric motor as recited in claim 1. The Kliman et al. reference fails to disclose an electronic device operable to establish an estimated value of an operating parameter of an electric motor based on electrical input data obtained at first, second, and third load points of the electric motor as recited in claim 15. The cited reference similarly fails to disclose an electronic device operable to establish estimated values of a plurality of electrical parameters of an inverter-driven electric motor based on baseline motor parameters and electrical input data obtained at a desired operating condition of the motor, wherein the baseline motor parameters include a first motor frequency and the desired operating condition comprises a second motor frequency as recited in claim 25. In fact, the Kliman et al. reference fails to provide any system with means for obtaining electrical parameters of a motor based on electrical input data of the motor and means for

then estimating at least one operating parameter of the motor based at least partially on the means for obtaining electrical parameters.

Additionally, the cited reference fails to teach a machine readable medium comprising a motor estimation module stored on the medium and adapted to establish estimated values of a plurality of electrical parameters of the electric motor based at least partially on measured motor parameters as recited in claim 41. Still further, the Kliman et al. reference fails to suggest the electronic device recited in claim 50, comprising a data processing module comprising a plurality of motor estimation modules adapted to estimate parameters of a motor based on input parameters. Also, the cited reference fails to disclose a method comprising operating an instrumentation system to establish values of a plurality of electrical parameters based on electrical input data and either stator resistance data or motor speed as recited by claims 55 and 58, respectively. Finally, the Kliman et al. reference fails to teach a method of operating a motor comprising operating an instrumentation system to establish an estimated operational parameter of the motor based on provided baseline parameters and electrical input data, as recited in claim 61.

Because the reference fails to teach such recitations, the Kliman et al. reference fails to anticipate independent claims 1, 15, 25, 32, 41, 50, 55, 58, and 61. Consequently, the Kliman et al. reference cannot support the Examiner's rejection with respect to these claims. Further, the claims depending from these independent claims are believed equally allowable not only for their depending from an allowable base claim, but also by virtue of the subject matter recited by each dependent claim. Accordingly, Applicant respectfully requests withdrawal of the rejection based on the Kliman et al. reference and allowance of claims 1-44 and 46-67.

The Ohm et al. Reference

In the Office Action, the Examiner also suggested that the Ohm et al. reference anticipates the present claims, stating simply: "See Ohm et al figures 1, 10A and 10B for

the electric motor 20 and its parameters.” Official Action mailed September 29, 2004, page 4. However, Applicant notes that the mere fact a reference may show an electric motor that happens to have parameters does not mean that the reference anticipates the present claims.

The Ohm et al. reference is directed to a system and method for determining the best angle advance and the amount of magnitude boost for any set of motor speed or load conditions while avoiding lengthy calibration procedures. *See* Ohm et al., col. 2, lines 29-33. To this end, the reference teaches a control system for motor 20. *See id.* at col. 3, lines 30-33; FIG. 1. This control system includes a feedback processor 30, which provides a rotor position and speed indication to a control logic unit 24, and an advance logic unit 34 that calculates the appropriate angle advance based on torque and speed of the motor. *See id.* at col. 3, line 55 – col. 4, line 10. The parameters denoted in FIG. 1 of the present reference are those needed to calculate such an advance angle. *See id.* at col. 10, line 66 – col. 11, line 2.

While the Examiner is correct in citing the Ohm et al. reference for disclosing a motor that has parameters, the present reference suffers from the same deficiencies as the Kliman et al. reference and similarly fails to anticipate each and every element of claims 1-44 and 46-67. For example, the reference fails to teach the elements recited above with respect to the Kliman et al. reference. Because the reference does not suggest each element recited by the present claims, the Ohm et al. reference also fails to anticipate the instant claims. Consequently, the Ohm et al. reference cannot support the Examiner’s rejection. Accordingly, Applicant respectfully requests withdrawal of the rejection based on the Ohm et al. reference and allowance of claims 1-44 and 46-67.

The Dowling et al. References

Applicant notes that the three Dowling et al. references cited by the Examiner each share the same disclosure, with the later patents both being continuations of the

earliest of the three. Accordingly, while only the earliest of the three references will be discussed below, the arguments will equally apply to the other Dowling et al. references cited by the Examiner.

Again, the Examiner merely states that Dowling et al. disclose an electric motor 30 that has electrical parameters. Official Action mailed September 29, 2004, page 4. The Dowling et al. reference concerns a method and apparatus for evaluating the condition and performance of a motor through use of a motor monitor. *See* Dowling et al., col. 9, lines 37-40. Accordingly, the reference discloses a system 10 comprising a processor 12, an electric motor 30, and a plurality of sensors 40 that measure current and voltage in the system. *See id.* at col. 9, lines 48-60; col. 11, lines 28 – col. 12, line 47. These measurements are then processed by processor 12 to analyze the performance and condition of motor 30. *See id.*, col. 11, lines 59-64.


Although the reference discloses a motor having parameters, the reference does not appear to disclose each recitation of the instant claims. The Dowling et al. references, therefore, suffer from the same deficiencies as the Kliman et al. and Ohm et al. references, similarly failing to anticipate each and every element of claims 1-44 and 46-67. For example, the references fail to teach the elements recited above with respect to the Kliman et al. reference. Because the references do not disclose each element, the Dowling et al. references also fail to anticipate the instant claims. Consequently, the Dowling et al. references cannot support the Examiner's rejection. Accordingly, Applicant respectfully requests withdrawal of the rejection based on the Dowling et al. references and allowance of claims 1-44 and 46-67.

Conclusion

In view of the remarks and amendments set forth above, Applicant respectfully requests allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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